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Economic Note

Employment, starting salaries, and educational indebtedness of 1986 graduates of US veterinary medical colleges

In cooperation with US colleges of veterinary medicine, the AVMA conducted its annual survey of the graduating classes of veterinary medicine in spring 1986. The primary purpose of the survey was to secure data on veterinary graduates' employment, salaries, and educational indebtedness. Of the 2,119 US graduates, 1,417 responded to the survey, a response rate of 67%.

Employment and income

At the time of the survey, 78% of the responding graduates had received at least one employment offer. The median number of offers received was 2 per graduate. At the time of the survey, 67% of the graduates had accepted positions for employment upon graduation.

Regarding the graduates who had accepted employment, 78% had accepted positions as employees in private practice (Tables 1 and 2). Mean starting salaries are reported for 782 graduates who indicated annual starting salaries for full-time employment. For graduates taking positions as private practice employees, the average starting salary was $21,205. This represents a 1.2% increase over the 1985 starting salary of $20,954 for private practice employees.[1]

Specifically, 36.1% entered small animal exclusive practice at an average annual salary of $21,620, up 0.9% from 1985; 5.4% entered equine predominant practice at an average annual salary of $21,125, up 2.0% from 1985. Also, 8.1% entered large animal predominant practice and 1.0% entered large animal exclusive practice, at respective annual salaries of $20,731 and $21,900, both up 1.0% from 1985. Fifteen percent entered mixed animal practice at an average salary of $20,487, up 1.0% from 1985. An additional 5.0% of the respondents reported they would be self-employed in private practice, with an expected average salary of $23,272.

Less than 2% of the graduates accepted positions with the federal government and the military service. Average starting salaries were $23,500 and $25,736, respectively. One respondent entering state/local government reported a salary of $28,560. Two graduates entering the industry sector reported an average salary of $28,500.

In the academic sector, less

Prepared by J. Karl Wise, PhD, economics consultant, Wisemark Associates, PO Box 94232, Schaumburg, IL 60194.

Table 1—Types of employment and starting incomes of a large sample of 1986 US veterinary medical college graduates

	Percentage of graduates	Average starting salary (No.)	Average additional compensation expected in 1st year (No.)
Large animal exclusive	1.0	$21,900 (9)	... ...
Large animal predominant	8.1	20,731 (65)	$2,603 (34)
Mixed animal	15.5	20,487 (120)	2,755 (68)
Small animal predominant	11.7	21,173 (99)	2,882 (60)
Small animal exclusive	36.1	21,620 (284)	2,516 (174)
Equine predominant	5.4	21,125 (48)	3,868 (25)
University	0.9	15,833 (6)	... ...
Federal government	0.3	23,500 (2)*	... ...
Military service	1.5	25,736 (11)†	2,400 (4)
State/local government	0.2	28,560 (1)	... ...
Industry/commercial	0.3	28,500 (2)	... ...
Advanced study	13.2	15,186 (106)	2,792 (24)
Self-employed	5.0	23,272 (22)	... ...
Other	0.8	18,300 (7)	6,156 (9)
	100 (914)	$20,478 (782)‡	$2,824 (406)

*Starting salary for federal government employment of veterinarians with no experience, no advanced degree other than the DVM, and not in the top 25% of their graduating class was $21,804 (GS 9, step 1). †Starting salary for military employment for veterinarians who are single, with no prior military service, including base pay, subsistence and quarters allowance, and veterinary special pay was $26,025. ‡Of the 914 graduates reporting employment, 782 graduates reported their annual starting salary for full-time employment.

Table 2—1986 starting salaries of 782 US veterinary medical college graduates, by type of employment

	LAE	LAP	MA	SAP	SAE	EP	U	FG	MS	SLG	IC	AS	SE	Other	Total
$11,000 or less	...	...	1	2	2	...	...	...	...	...	...	7	1	2	15
$11,001 to $13,000	...	3	...	...	1	5	1	...	...	...	...	15	...	...	25
$13,001 to $15,000	...	...	4	1	5	3	2	...	...	...	...	47	...	...	62
$15,001 to $17,000	2	...	1	1	8	1	1	...	...	...	...	21	...	...	35
$17,001 to $19,000	1	13	25	17	24	8	2	...	...	...	...	9	3	...	102
$19,001 to $21,000	...	21	52	29	81	8	...	...	1	...	...	3	5	2	202
$21,001 to $23,000	2	18	20	26	90	8	...	1	3	...	1	2	3	1	175
$23,001 to $25,000	3	8	15	16	59	9	...	1	3	...	...	1	5	1	121
$25,001 to $27,000	...	2	2	3	8	4	...	...	1	...	...	...	1	...	21
$27,001 to $29,000	1	...	...	1	3	...	...	...	2	1	...	...	...	...	8
$29,001 to $31,000	...	...	...	2	...	...	...	...	...	...	...	...	3	...	5
$31,001 to $33,000	...	...	...	1	1	...	...	...	...	...	...	...	...	...	2
More than $33,000	...	...	...	...	2	2	...	...	1	...	1	1	1	1	9
Total	9	65	120	99	284	48	6	2	11	1	2	106	22	7	782

LAE = Large animal exclusive; LAP = Large animal predominant; MA = Mixed animal; SAP = Small animal predominant; SAE = Small animal exclusive; EP = Equine predominant; U = University; FG = Federal government; MS = Military service; SLG = State/local government; IC = Industrial/commercial; AS = Advanced study; SE = Self-employed.

*Table 3—Educational debt of 1986 US veterinary medical college graduates**

Debt ($)	Relative frequency (%)	Cumulative frequency† (%)
0	18.2%	100.0%
1 to 5,000	7.3	81.8
5,001 to 10,000	7.8	74.5
10,001 to 15,000	8.7	66.7
15,001 to 20,000	12.3	58.0
20,001 to 25,000	16.5	45.7
25,001 to 30,000	11.4	29.2
30,001 to 35,000	6.1	17.8
35,001 to 40,000	4.2	11.7
40,001 to 45,000	2.9	7.5
45,001 to 50,000	2.3	4.6
More than 50,000	2.3	2.3

*Total respondents = 1,417. †Cumulative frequency percentages represent the percentage of graduates with debt in excess of the corresponding next lowest debt interval; eg, 58% of the graduates reported debt in excess of $15,000.

than 1% took university positions (research or teaching) at an average salary of $15,833, and 13.2% would begin advanced study (graduate degree, internship, or residency program) at an average salary of $15,186.

All graduates were asked if they would receive compensation in addition to their salary in their first year of employment. One half of the graduates who reported starting salaries indicated that they would receive additional compensation within the first year. Most likely, the additional pay represents a percentage of gross income, a percentage of emergency fees, a bonus, a salary raise, or other financial compensation. Most graduates anticipating additional pay expected amounts ranging from $2,000 to $4,000.

Educational debt

All graduates were requested to indicate what their total educational indebtedness would be upon graduation. For the 1,159 graduates (82%) who indicated having educational debt, the average debt was $23,420, up 5.2% from 1985. The relative frequency distribution showed that 58% of 1986 graduates, compared with 42% of 1985 graduates and 36% of 1984 graduates, had educational debt in excess of $20,000 (Table 3).[1,2]

Average educational debt also was determined by type of employment graduates accepted at the time of the survey (Table 4). This distribution suggested that graduates with high debt chose private practice employment.

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1. Wise JK, Raef TA. Employment, starting salaries, and educational indebtedness of 1985 graduates of US veterinary medical colleges. *J Am Vet Med Assoc* 1986;188:193–194.

2. Wise JK. Employment, starting salaries, and educational indebtedness of 1984 graduates of US veterinary medical colleges. *J Am Vet Med Assoc* 1984;185:909–910.

Table 4—1986 Educational debt of 649 US veterinary medical college graduates, by type of employment

Debt ($)	LAE	LAP	MA	SAP	SAE	EP	U	FG	MS	SLG	IC	AS	SE	Other
1 to 5,000	1	5	11	5	18	4	...	...	...	...	1	6	1	2
5,001 to 10,000	1	5	6	6	25	4	2	...	2	...	...	9	1	...
10,001 to 15,000	...	5	11	8	24	5	1	1	1	...	...	8	1	1
15,001 to 20,000	...	8	12	12	29	6	1	...	3	1	1	13	1	2
20,001 to 25,000	3	12	23	17	45	9	...	...	...	...	...	21	5	1
25,001 to 30,000	2	5	13	14	34	3	1	1	2	...	...	11	3	...
30,001 to 35,000	...	6	4	7	22	6	...	...	...	...	...	8	1	...
35,001 to 40,000	...	2	5	3	18	4	...	...	1	...	...	5	...	...
40,001 to 45,000	1	1	6	3	12	1	...	...	...	...	...	...	...	...
45,001 to 50,000	1	2	4	2	4	...	...	...	...	...	...	5	1	1
More than 50,000	...	2	2	3	8	...	...	...	...	...	...	1	2	...
Total	9	53	97	80	239	42	5	2	9	1	2	87	16	7
Average debt	$25,944	$23,165	$23,832	$24,331	$24,457	$22,304	$16,400	$22,500	$20,056	$19,900	$10,500	$23,435	$18,571	$29,643

LAE = Large animal exclusive; LAP = Large animal predominant; MA = Mixed animal; SAP = Small animal predominant; SAE = Small animal exclusive; EP = Equine predominant; U = University; FG = Federal government; MS = Military service; SLG = State/local government; IC = Industry/commercial; AS = Advanced study; SE = self-employed.

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1986 AVMA Activities Summary

Membership

AVMA's membership increased by 4.5% to 43,678 members at the end of 1986. The 2,626 new members include 2,098 new graduates. Of the 2,114 graduates of US veterinary colleges during 1986, 2,097 (99.2%) joined the AVMA. All of the graduates from 17 veterinary colleges joined the Association. The Association lost 765 members during the year, as follows: death (144), resignation (63), and nonpayment of dues (558). As shown in the table below, 78.9% of the US members are in private practice; 7.5% are active in academic disciplines and clinical specialties; 7.8% are involved in public health, regulatory, military, and other activities; 4.3% are retired; and 1.4% (mostly new graduates) are in unknown activities.

AVMA Membership According to Professional Activity—Dec 31, 1986

Bovine practice (exclusive)	418
Equine practice (exclusive)	1,958
Porcine practice (exclusive)	52
Large animal practice (all species)	1,460
Mixed practice (predominantly large animal)	4,666
Mixed practice (50-50 large and small)	3,441
Mixed practice (predominantly small animal)	4,777
Small animal practice (exclusive)	17,463
Poultry practice (exclusive)	76
Feline Practice (exclusive)	47
	34,358
Anatomy	98
Biochemistry	13
Microbiology	280
Parasitology	71
Pathology	894
Pharmacology	81
Physiology	119
Radiology	115
Toxicology	135
Surgery	274
Pathology, Avian	95
Pathology, Clinical	103
Ophthalmology	103
Nutrition	49
Clinician	432
Theriogenology	130
Anesthesiology	63
Internal Medicine	90
Cardiology	13
Dermatology	28
Neurology	16
Epidemiology	44
Oncology	21
Aquatic	18
Avian medicine	83
Ethology	2
	3,370
Veterinary public health	194
Veterinary preventive medicine	51
Teaching and research	318
Regulatory veterinary medicine	661
Administrative	140
Laboratory animal medicine	525
Wildlife, zoo and fur-bearing animals	173
Extension veterinary medicine	64
Diagnostic veterinary medicine	149
Industrial veterinary medicine	276
Military veterinary service	418
Animal technician educator	57
Unspecified	439
	3,465
Retired	1,862
Unknown professional activity	623
Total membership	43,678

Public Information

Media Relations

The AVMA prepared and distributed several news releases detailing a variety of animal, public health, and Association issues. In November, the AVMA began a program of preparing and distributing detailed news releases on food animal topics. The releases are distributed to over 5,000 agricultural writers, editors, and broadcasters.

In addition to news releases, the AVMA provided editorial and story assistance to a wide variety of media outlets including all three major television networks and Public Broadcasting System, as well as newspapers and periodicals including *The New York Times, Better Homes and Gardens, The Wall Street Journal, The Chicago Tribune, Veterinary Economics, DVM Magazine, The Bloodhorse, Equus, Modern Veterinary Practice,* and *USA Today.*

For the second year in a row, the AVMA published a *Media Guide to Veterinary Sources of Information.* The 1986 booklet was expanded to 32 pages and lists over 295 veterinary and veterinary-related organizations. Over 5,000 copies were distributed to newspapers, television stations and networks, wire services, magazines, writers, editors, and syndicates.

The AVMA continued, for a second year, to distribute *Animal Health News And Feature Tips.* This quarterly publication contained over 100 story ideas in 1986. The publication is distributed to over 4,000 newspapers, wire services, farm and consumer magazines, television and radio stations, and specialized media. News and feature tips include stories about research programs at veterinary schools, AVMA activities, seasonal health tips, information on upcoming veterinary meetings, and other news items that would be of interest to the consumer and professional press.

National Pet Week

"It All Adds Up To LOVE" was the theme for the 6th annual National Pet Week campaign held May 4–10, 1986.

Many state and local asscciations, as well as individual practitioners, de-

1986-1987 AVMA officers are (l to r) Drs. Walter Martin, Jr, treasurer; *William Ingalls,* vice president; *Richard Fink,* president-elect; *Thomas Roberts,* Executive Board chairman; *and Alton Hopkins, Jr,* president.

Economic Note

Employment of 1986 male and female graduates of US veterinary medical colleges

On the basis of the 1986 AVMA survey of 1,417 graduates of US veterinary medical colleges, it was estimated that 78% of the graduates accepted positions as private practice employees at an average annual salary of $21,205.[1]

The purpose of this report is to describe in greater detail the employment choices of 1986 veterinary medical graduates. Due to the increasing proportion of female veterinary medical college students from 33% in 1980 to nearly 51% in 1986, it is useful to compare the employment choices of female and male graduates.

Type of employment

Of the 1,417 graduates responding to the 1986 AVMA survey, 48% were women and 52% were men. Table 1 shows the proportion of graduates receiving offers of employment upon graduation. Excluding graduates entering advance study programs (graduate degrees, internships, or residencies), only 70% of the women received one or more offers of employment, compared with 85% of the men.

Regarding graduates who had accepted employment (67%), 94% of the women and 99% of the men would work full-time, whereas 6% of the women and 1% of the men would work part-time. Specifically, of the 28 graduates indicating part-time employment, 21 (75%) were women, and 7 were men (25%).

Table 1—Employment offers: Male and female, 1986

	Male (n = 671)	Female (n = 589)	Total (n = 1,260)*
Percentage of graduates who received 1 or more offers	85	70	78
Percentage of graduates who received no offers	15	30	22

*Excludes graduates entering advanced study programs.

The distribution of female and male graduates was determined according to type of full-time employment (Table 2). Approximately 73% of female graduates accepting full-time employment took positions as employees in private practice; this compares with 84% of male graduates. About 19% of the women, compared with 10% of the men, began advanced study programs.

Starting salaries

Graduates were asked to report their starting salary (on an annual basis) for full-time em-

Table 2—Full-time employment: Males and females, 1986

	Male (n = 470)	Female (n = 308)
Large animal exclusive (%)	1.5	0.6
Large animal predominant (%)	10.6	4.5
Mixed animal (%)	18.1	11.0
Small animal predominant (%)	13.6	11.4
Small animal exclusive (%)	33.8	39.9
Equine predominant (%)	6.4	5.8
University (research, teaching) (%)	0.2	1.6
Federal government (%)	. . .	0.6
Military service (%)	1.9	0.6
State/local government (%)	0.2	. . .
Industry/commercial business (%)	0.4	. . .
Advanced study (%)	10.0	19.2
Self-employed (%)	2.6	3.2
Other employment (%)	0.6	1.3

Table 3—Starting salary by type of practice: Males and females, 1986

	Male	Female
Large animal exclusive	$22,443 (7)	$20,000 (2)
Large animal predominant	$21,239 (50)	$19,036 (14)
Mixed animal	$20,499 (87)	$20,502 (36)
Small animal predominant	$21,143 (65)	$21,340 (35)
Small animal exclusive	$22,117 (162)	$20,930 (125)
Equine predominant	$23,029 (31)	$18,061 (18)
All practice types	$21,576 (402)	$20,577 (230)

*Figures in parentheses = no. of graduates reporting full-time employment and starting salary.

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ployment. Table 3 shows that the average female graduate's starting salary as a private practice employee was $20,577, about $1,000 or 4.6% less than the average male graduate's starting salary as a private practice employee. In mixed animal and small animal predominant practices, women and men had nearly identical salaries. In large animal exclusive, small animal exclusive, and equine predominant practice, however, men would earn higher salaries on average, by amounts ranging from about $1,200 in small animal exclusive to nearly $5,000 in equine exclusive practice. Since the survey did not secure information on each graduate's responsibilities or hours worked in the new job, it is not possible to draw conclusions from these survey data about reasons associated with varying salary levels between male and female graduates.

Fringe benefits

All graduates were asked to indicate which of 12 fringe benefits would be provided by their new employer. Table 4 shows the percentage of male and female graduates who accepted full-time employment receiving each of the fringe benefits. The percentages of men and women receiving fringe benefits were similar. Approximately 60% of the women and 56% of the men would be covered by a medical/hospital plan, 75% of the women and 72% of the men would receive annual vacation leave, and 55% of both women and men would have employer-paid continuing education expenses.

Table 4—Fringe benefits of full-time employed graduates: Male and female, 1986

	Male (n=515)	Female (n=333)	Total (n=848)
Life insurance (%)	25	23	24
Medical/hospital plan (%)	56	60	57
Dental plan (%)	9	10	10
Pension plan (%)	9	6	8
Profit sharing plan (%)	14	14	14
Disability insurance (%)	28	26	27
Liability insurance (%)	53	51	52
Association dues (%)	35	37	36
Continuing education (%)	55	55	55
Annual vacation leave (%)	72	75	73
Sick leave (%)	37	35	36
Housing/apartment (%)	6	3	4

Graduate characteristics

Responding graduates provided information on personal characteristics such as age, marital status, and number of children (Table 5). The average age of both females and males was 27 years. Regarding marital status, 62% of female graduates were single, 32% were married, and 5% were divorced. Of the male graduates, 52% were single, 45% were married, and 3% were divorced. About 7% of the women and 19% of the men had one or more children.

Table 5—Personal characteristics: Male and female, 1986

	Male	Female	Male and female
Average age (yr)	27	27	27
Marital status			
Single (%)	52	62	57
Married (%)	45	32	39
Divorced (5)	3	5	4
Graduates with children (%)	19	7	13

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1. Wise JK. Employment, starting salaries, and educational indebtedness of 1986 graduates of US veterinary medical colleges. *J Am Vet Med Assoc* 1987; 190:209–210.

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VBPA

Trends in veterinarians' incomes

On the basis of surveys conducted by the AVMA, the mean professional income of US veterinarians increased from $41,034 in 1983 to $43,590 in 1985, an annual increase of 3.1%.[1,2] Table 1 shows mean incomes and the percentage change for this period for each type of private practice and nonprivate practice employment.

Private practitioners' incomes increased 7.1% from $39,669 in 1983 to $42,498 in 1985. Small animal predominant and small animal exclusive practitioners had the largest gains, with increases of 17.2% and 10.5%, respectively. The gains in small animal practice are moderated by the large percentage of recent graduates that enter small animal exclusive practice each year.[3] Large animal exclusive practitioners suffered a decline in mean income of −5.0% over the 2-year period.

While the mean income of nonprivate practice veterinarians increased 4.2% from 1983 to 1985, academic veterinarians had a decline of −2.0%, attributable in part to increased numbers of veterinarians employed at the lower end of the income distribution scale.[4] The mean income of armed forces veterinarians increased 14.2%, while the mean income of other federal government veterinarians increased 2.1%.

It is important to determine the extent of increase or decrease in veterinarians' purchasing power by taking into account the effect of price changes. The most widely used measure of changes in prices at the retail level is the consumer price index for all urban consumers. The consumer price index is sometimes referred to as the cost-of-living index.

To analyze veterinarians' professional incomes in real terms, ie, correcting for the increased cost of living, professional incomes in 1985 were expressed in 1983 dollars. The consumer price index increased 8% from 1983 to 1985. Therefore, in real terms, the mean professional income of veterinarians declined 1.6% from 1983 to 1985.[5] Mean real nonprivate prac-

Table 1—Money and real incomes of veterinarians, 1983–1985

	Money income			Real income*	
	1983 ($)	1985 ($)	Percentage change, 1983–1985 (%)	1985 (1983 dollars) ($)	Percentage change, 1983–1985 (%)
Private practice†					
Large animal exclusive	42,168	40,051	−5.0	37,084	−12.1
Large animal predominant	41,530	42,790	3.0	39,620	−4.6
Mixed animal	35,169	37,911	7.8	35,103	0.0
Small animal predominant	35,805	41,963	17.2	38,855	8.5
Small animal exclusive	36,683	42,744	10.5	39,577	2.3
Equine	48,300	51,123	5.8	47,336	−2.0
Total	39,669	42,498	7.1	39,350	−0.1
Nonprivate practice					
College or university	44,513	43,604	−2.0	40,374	−9.3
Federal government	42,431	43,323	2.1	40,114	−5.5
State or local government	37,854	40,549	7.1	37,545	−0.8
Armed forces	36,515	41,688	14.2	38,600	5.7
Industry or other	56,734	59,571	6.8	55,158	−1.1
Total	41,393	47,280	4.2	43,777	−3.6
All veterinarians	41,034	43,590	6.2	40,361	−1.6

*Money income expressed in 1983 dollars, ie, correcting for the increased cost of living measured by the consumer price index (all urban consumers). †Includes veterinarian-owners and veterinarian-employees in private practice; owners' income excludes return on equity in practice real estate.

Prepared by J. Karl Wise, PhD, Wisemark Associates, PO Box 681189, Schaumburg, IL 60168-1189.

tice income declined 3.6%, while mean real private practice income declined 0.1% over the 2-year period.

On the basis of the 1985 AVMA manpower study, mean real private net individual income was projected to decline by the year 2000 to 75% of its value in the year 1980.[6] Most of the decline was projected to occur by 1990 as mean real private practice income would fall to 82% of its 1980 level by the year 1990. From 1980 to 1990, this represents an 18% decline in projected real income. It was stated in the manpower study synopsis that the impact would be less for some established practitioners than for new veterinarians, but all practitioners would be affected. Specifically, it was believed that the impact of the projected decline would be reflected initially in depressed entry-level salaries, followed by lower overall mean real incomes in subsequent years.

Table 2—Money and real incomes in private practice, 1980–1986

	1980 ($)	1983 ($)	1985 ($)	1986 ($)
Private practice starting salary				
Money income	18,552 (1.00)*	19,872 (1.07)	20,956 (1.13)	21,205 (1.14)
Real income†	22,433 (1.00)	19,872 (0.89)	19,421 (0.87)	19,277 (0.86)
Private practice owners' professional income‡				
Money income	38,755 (1.00)	44,249 (1.14)	51,084 (1.32)	...
Real income	46,862 (1.00)	44,249 (0.94)	47,281 (1.01)	...

*Numbers in parentheses are standardizad values (1983 = 1.00) to indicate change in money and real incomes over time. †Money income expressed in 1983 dollars, ie, correcting for the increased cost of living measured by the consumer price index (all urban consumers). ‡Excludes owners' economic return on equity in practice real estate.

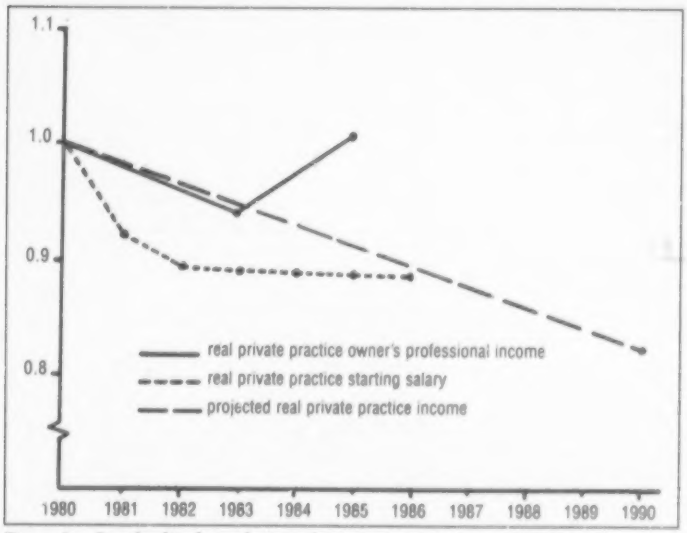

Figure 1—Standardized trends in real private practice income (1980 = 1.0).

Table 2 shows money and real incomes for specific years from 1980 to 1986 for new veterinarians and private practice owners.[7] Starting salaries increased 14% over this period in money terms, but declined 14% in real terms. New veterinarians' incomes in real terms in 1986 have declined to 86% of their 1980 level. Figure 1 shows that the decline occurred before 1982 and has been nearly level since then.

Private practice owners' professional incomes increased by 32% in money terms, slightly more than the consumer price index (31% increase) from 1980 to 1985. Practice owners' incomes, specifically incomes of small animal practice owners, kept pace with increased costs of living because of substantial increases in practice revenues from 1983 to 1985. From 1980 to 1983, mean real income of practice owners actually declined by 6%, but rebounded to its 1980 level by 1985.

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BPA

Economic Note

1985 incomes of US veterinarians

The American Veterinary Medical Association conducted an economic survey of US veterinarians in spring 1986. The purpose of the survey was to secure accurate data on veterinarians' earnings in private practice and in nonprivate practice employment. Findings from the survey, to be published in JAVMA in the coming months, should be useful because they provide information on veterinarians' incomes according to type of employment, geographic region, years of experience, and other important characteristics. In addition, valuable national data will be provided on economic returns to private veterinary practice, staff numbers and salaries, cash operating expenses, and other practice characteristics.

Survey method and sample size

The sample of veterinarians was selected randomly from AVMA's computerized records of 40,190 nonretired member and nonmember veterinarians. In the private practice sector, survey questionnaires were mailed to 1,000 veterinarians in each of six categories of private practice: large animal exclusive, large animal predominant, mixed animal (50% large, 50% small), small animal predominant, small animal exclusive, and equine. The large animal exclusive group included veterinarians engaged in bovine, porcine, and poultry practice, but not equine practice. Each group was sampled equally to ensure statistically reliable estimates for each type and to permit analysis within each group. The survey also included 668 veterinarians employed in private practice, but who were not classifiable according to the aforementioned six types of private practice.

In the nonprivate practice sector, questionnaires were mailed to 500 veterinarians in each of four nonpractice categories: college or university, federal government, state or local government, and industry or other employers. Surveys also were mailed to all 493 armed forces veterinarians listed in AVMA records as residing in the United States. The total survey sample consisted of 9,161 US veterinarians (Table 1).

An advance postcard was mailed to the entire sample on Mar 19, 1986, alerting veterinarians that they would soon receive the biennial economic survey. The questionnaire was mailed on Mar 24 and was followed by two mailings of reminder postcards. When the survey was terminated (June 15), 3,590 (39%) questionnaires had been returned to the AVMA. The sample of respondents was determined to be representative of the US veterinary medical population with respect to geographic, sex, and age distributions.

The survey questionnaire consisted of two sections. Section 1 was completed by all veterinarians in private and nonprivate practice and included questions on individuals' 1985 incomes, type of practice or employment, years of experience, age, sex, fringe benefits, hours and weeks worked, practice ownership status, and share of capital investment in practice real estate and

Table 1—1986 biennial economic survey sample

	No. of veterinarians in population	No. of veterinarians in sample	No. of respondents	Percentage response
Veterinarians in private practice				
Large animal exclusive	1,566	1,000	143	14
Large animal predominant	4,752	1,000	330	33
Mixed animal	3,257	1,000	333	33
Small animal predominant	4,537	1,000	393	39
Small animal exclusive	15,438	1,000	615	61
Equine	1,538	1,000	260	26
Other types	668	668	74	7
All practice types	31,756	6,668	2,148	32
Veterinarians not in private practice				
College or university	3,713	500	299	60
Federal government	1,344	500	277	55
State or local government	756	500	256	51
Armed forces	493	493	232	47
Industry and other	2,128	500	378	76
All employer types	8,434	2,493	1,442	58

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Table 2—Mean incomes of veterinarians in private practice, 1985

Type of practice	Mean income ($)	Median income ($)	No. of respondents
Large animal exclusive	43,481	34,750	110
Large animal predominant	47,490	39,250	276
Mixed animal	43,329	35,500	252
Small animal predominant	47,402	37,900	307
Small animal exclusive	49,098	36,250	454
Equine predominant	55,994	42,100	181
All practice types	48,056*	37,082*	1,600

*Weighted estimates based on total population of 31,756 veterinarians in private practice.

equipment. Section 2 was completed only by veterinarians who were private practice owners, ie, sole proprietors, partners, or shareholders in private veterinary practices. Information was provided on type of practice, facility and organizational form, assets and liabilities, market and community size, 1985 gross practice revenue, 1985 operating expenses, staff numbers and salaries, and caseload.

Income analysis

Veterinarians were requested to indicate their 1985 individual net income, before personal taxes, from professional veterinary medical activity, including income from practice, salary, profit sharing, and bonuses. If the respondent was the owner of a veterinary practice, owner's return from capital invested (ie, practice real estate) was included as income, even if leased by the owner to the practice.

Respondents reported individual net incomes at $3,000 increments ranging from "less than $16,000" to "$76,000 or more." Responses from veterinary practice owners were reviewed in detail to obtain valid estimates of net practice income. Specifically, reported individual net income was compared with computations made on the owner-respondent's practice income and expense data. For this analysis, individual private practice net income included return on capital invested, labor, and management.

Mean income was calculated by summing all income values and dividing by the number of respondents. Median income was calculated as the income level that divided the income distribution in half, ie, 50% of all veterinarians earning incomes below and 50% above this income level. Respondents were included in this analysis if they worked on the average at least 30 h/wk, and at least 48 weeks in their reported type of practice or employment in 1985.

Veterinarians in private practice

The 1985 mean individual net income, before personal taxes, of US veterinarians in private practice was $48,056 (Table 2). Mean income for specific types of private practice ranged from lows of $43,329 for mixed animal practitioners and $43,481 for large animal exclusive practitioners to a high of $55,994 for equine practitioners. Mean incomes for other practice types ranged downward as follows: small animal exclusive, $49,098; large animal predominant, $47,490; and small animal predominant, $47,402.

The 1985 median individual net income of US veterinarians in private practice was $37,730. The median incomes ranged from a low of $34,750 for large animal exclusive practice to a high of $42,100 for equine practice. In every type of practice, the median income was less than the mean income. This difference highlights the fact that a few very high incomes offset many lower incomes to yield a mean higher than the median.

A comparison of mean incomes for 1983 and 1985 showed that private practice income increased 3.9%, or +1.9%/yr.[1] With the exception of large animal exclusive practice, mean income increased in all practice categories over the 2-year period. Large animal exclusive mean income declined 6.1% from 1983 to 1985, whereas large animal predominant income increased 3.3%, mixed animal increased 6.8%, small animal predominant increased 7.8%, small animal exclusive increased 3.3%, and equine increased 4.6%.

A comparison to 1983 median incomes, however, showed that large animal exclusive practitioners' median income declined 9.8% from 1983 to 1985, about −4.9%/yr.[1] Large animal predominant practitioners' median income declined 4.9% over the same 2-year period, about −2.4%/yr. Mixed animal practitioners' median incomes remained stable from 1983 to 1985, whereas small animal predominant and small animal exclusive practitioners' median incomes declined 1.5% (−0.7%/yr) and 5.7% (−2.8%/yr), respectively. Equine practice median income increased 2.4%, or about +1.2%/yr, from 1983 to 1985. Overall, median private practice income decreased 4.3%, or −2.1%/yr.

For each type of private practice, percentages of veterinarians were determined for income classes ranging from less than $19,000 to more than $73,000 (Table 3). Each income class represented an income interval of $6,000. Comparisons of percentages of veterinarians in particular income classes indicated greater income variation in some types of practices than in others. For example, 22% of equine practitioners had incomes greater than $73,000, whereas only 6.4% of large animal practitioners had incomes greater than $73,000.

Veterinarians not in private practice

The 1985 mean income of US veterinarians not in private practice was $47,280 (Table 4). Mean incomes for specific types of nonprivate practice ranged

Table 3—Percentage distribution of veterinarians in private practice, by income classes, 1985

Income class ($)	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	Equine predominant
Less than 19,000	9.1	6.9	10.7	7.5	4.1	5.5
19,000 to 24,999	11.8	12.7	15.3	13.0	15.2	7.7
25,000 to 30,999	12.7	15.6	13.4	15.6	16.9	14.9
31,000 to 36,999	19.1	9.8	10.3	9.8	13.2	11.6
37,000 to 42,999	9.1	7.6	8.4	10.1	8.7	8.3
43,000 to 48,999	5.5	6.9	5.7	9.1	7.4	7.2
49,000 to 54,999	5.5	11.6	9.2	5.9	6.3	11.0
55,000 to 60,999	10.0	5.4	7.6	5.2	4.1	3.3
61,000 to 66,999	5.5	2.5	4.2	5.9	4.3	3.3
67,000 to 72,999	5.5	4.7	3.4	3.3	2.6	4.4
More than 73,000	6.4	16.3	11.8	14.7	17.3	22.7
	100	100	100	100	100	100
	(110)*	(276)	(262)	(307)	(462)	(181)

*Number of usable responses in parentheses.

Table 4—Mean incomes of veterinarians not in private practice, 1985

Type of employer	Mean income ($)	Median income ($)	No. of respondents
College or university	43,604	40,990	239
Federal government	43,323	40,264	213
State or local government	40,549	37,857	211
Armed forces	41,688	38,200	194
Industry/commercial	62,547	57,357	146
Other/not-for-profit organization	53,529	51,833	71
All employer types	47,280*	44,152*	1,074

*Weighted estimates based on population of 8,434 veterinarians not in private practice.

from a low of $40,549 for state or local government to a high of $62,547 for industry. Mean incomes for other nonprivate practice types were $41,688 for armed forces, $43,323 for federal government, $43,604 for college or university, and $53,529 for other/not-for-profit organizations.

The 1985 median individual income of US veterinarians not in private practice was $44,152. The median incomes ranged from a low of $37,857 for state or local government to a high of $57,357 for industry. A comparison of the mean and median incomes indicated the difference between them was small, which suggests there were relatively few high incomes offsetting many lower incomes. Illustrating this is the fact that only in the industry and other/not-for-profit groups was there a large percentage (26.9% and 16.9%, respectively) that earned more than $73,000 (Table 5).

A comparison with 1983 incomes showed that mean nonprivate practice incomes increased 1.8% over the 2-year period.[1] Mean college or university income declined by 2% from 1983 to 1985, whereas all other employer groups showed gains in mean individual income over the 2-year period: federal government mean income increased 2.1%; state or local government increased 7.1%; armed forces gained 14.2%; industry/commercial gained 2.3%; and other/not-for-profit organization gained 12.4%.

Reliability of 1985 income estimates

Estimates of veterinarians' incomes derived from sample surveys are subject to sampling errors that arise because observations are made on only a portion of the total population. To make statistical inferences about true population mean incomes, it is useful to determine confidence intervals.

A confidence interval is a

Table 5—Percentage distribution of veterinarians not in private practice, by income classes, 1985

Income class ($)	College or university	Federal government	State or local government	Armed forces	Industry/ commercial	Other/ not-for-profit
Less than 19,000	15.1	0.5	0.9	0.5	1.4	5.6
19,000 to 24,999	5.3	5.2	2.4	2.6	2.8	7.0
25,000 to 30,999	4.6	9.4	10.9	18.0	2.8	11.3
31,000 to 36,999	7.5	14.1	24.2	19.6	4.1	4.2
37,000 to 42,999	17.2	27.7	28.4	16.5	9.0	7.0
43,000 to 48,999	13.0	13.1	13.7	15.5	11.7	5.6
49,000 to 54,999	11.7	14.6	9.5	11.9	11.0	14.1
55,000 to 60,999	5.9	5.6	6.2	9.3	12.4	5.9
61,000 to 66,999	9.6	6.1	1.9	3.6	12.4	9.9
67,000 to 72,999	3.8	2.8	0.5	2.1	5.5	8.5
More than 73,000	5.9	0.9	1.4	0.5	26.9	16.9
	100	100	100	100	100	100
	(239)*	(213)	(211)	(194)	(145)	(71)

*Number of usable responses in parentheses.

Table 6—Mean income confidence intervals for US veterinarians, 1985

	Estimated mean income ($)	Standard error of estimated mean income ($)	95% confidence interval of true mean income ($)*
Veterinarians in private practice			
Large animal exclusive	43,481	2,284	$39,004 \leq \mu \leq 47,957$
Large animal predominant	47,490	1,653	$44,250 \leq \mu \leq 50,729$
Mixed animal	43,329	1,611	$40,171 \leq \mu \leq 46,486$
Small animal predominant	47,402	1,790	$43,893 \leq \mu \leq 50,910$
Small animal exclusive	49,098	1,597	$45,967 \leq \mu \leq 52,228$
Equine predominant	55,994	3,102	$49,914 \leq \mu \leq 62,073$
All practice types	48,056	792	$46,504 \leq \mu \leq 49,608$
Veterinarians not in private practice			
College or university	43,604	1,228	$40,116 \leq \mu \leq 44,929$
Federal government	43,323	829	$41,698 \leq \mu \leq 44,947$
State or local government	40,549	721	$39,135 \leq \mu \leq 41,962$
Armed forces	41,688	873	$39,976 \leq \mu \leq 43,399$
Industry/commercial	62,547	2,097	$58,436 \leq \mu \leq 66,657$
Other/not-for-profit organization	53,529	3,173	$47,310 \leq \mu \leq 59,748$
All employer types	47,280	566	$46,171 \leq \mu \leq 48,389$

*Form of confidence interval is $(\bar{x} - t\sigma_{\bar{x}} \leq \mu \leq (\bar{x} + t\sigma_{\bar{x}})$ where $\bar{x}$ is mean income, t is 1.96, $\sigma_{\bar{x}}$ is SE of the mean income, and μ is the true mean income.

range of values that has a predetermined probability of including the true population mean income. For example, it may be stated that there is a 95% probability that the estimated mean income plus or minus 2 standard errors will encompass the true, but unknown, population mean income.

Confidence intervals of the true mean incomes in 1985 for all private and nonprivate practice types were determined (Table 6). For all private practitioners, one can be 95% confident that the interval $46,504 to $49,608 will encompass the true 1985 average income. Because of the smaller sample sizes in each of the six private practice types and six nonprivate practice types, 95% confidence intervals for these groups are greater, ranging from $3,000 to $12,000.

Since a mean income estimate is influenced by extreme values at the high end of an income distribution, the median estimate often is considered a more meaningful estimate of the central income level of a population.

1. Wise JK. 1983 incomes of US veterinarians. *J Am Vet Med Assoc* 1985; 186:395–397.

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Economic Note

1985 US veterinary practice income, expenses, and financial ratios

The American Veterinary Medical Association's 1986 biennial economic survey of US veterinarians included questions on financial aspects of veterinary practice operation in 1985.[1] Analysis of these survey data emphasized gross practice income, net practice income, returns to capital, labor, and management, cash operating expenses, and operating expense and financial ratios. Practices were included in this analysis if: they employed at least 1 full-time equivalent veterinarian; they had been established for more than 1 year; they were operational 48 or more weeks in 1985; and they reported gross income, expense, and asset and liability data on the survey.

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Practice income

Mean 1985 gross practice income was $245,287, up 21% from $202,616 in 1983 (Table 1).[2] Analysis by practice type showed that gross practice income ranged from a low of $200,385 for large animal exclusive practice to a high of $313,443 for large animal predominant practice (Table 1). Mean gross practice income was $247,035 for equine practice, $232,156 for mixed animal, $219,701 for small animal predominant, and $245,054 for small animal exclusive practice. A comparison of 1985 and 1983 data showed only slight increases in gross practice income for large animal practice and large increases for small animal and equine practice: large animal exclusive, up 4% from 1983 to 1985; large animal predominant, up 1%; mixed animal, up 14%; small animal predominant, up 27%; small animal exclusive, up 29%; and equine predominant, up 21%.

Mean 1985 total practice expenses were computed as the sum of all cash operating expenses and employed (nonowner) veterinarian's earnings. Office rent was included in total practice expenses only if practice real estate was leased from other than a veterinarian involved in the practice. Mean total practice expense was $152,088, ranging from a low of $124,039 for large animal exclusive to a high of $200,129 for large animal predominant practice (Table 1). For all practice types, mean total practice expenses were up 24% from 1983.

Net practice income for 1985 was determined by subtracting total practice expenses from gross

Table 1—Mean 1985 practice return ($) on capital, labor, and management

	Equine predominant	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	All practices
Gross practice income	247,035	200,385	313,443	232,156	219,701	245,054	245,287
Total practice expenses*	155,344	124,039	200,129	147,458	135,989	149,992	152,088
Net practice income†	91,691	76,346	113,314	84,698	83,712	95,062	93,199
Return on capital‡	10,651	4,672	9,837	10,889	11,973	14,608	12,591
Return to labor and management§	81,040	71,674	103,477	73,809	71,739	80,454	80,609
Net practice income per owner‖	69,389	48,556	53,939	51,738	59,991	75,166	66,544
Return to labor and management per owner¶	59,231	44,732	47,662	44,108	50,847	63,011	56,479
Annual salary per owner#	49,546	35,970	37,705	40,058	39,592	51,631	46,169
Return to management per owner**	9,685	8,762	9,977	4,050	11,255	11,380	10,311
	(75)††	(71)	(175)	(159)	(179)	(179)	

*Total practice expenses include all cash operating expenses plus employed (nonowner) veterinarians' earnings, minus office rent if real estate was leased from veterinarians involved in the practice. †Net practice income equals the difference between gross practice income and total practice expenses. ‡Return on capital was computed as 12% of practice owners' equity. Equity equals the difference between the fair market value of practice fixed assets and long-term debt. §Return to labor and management was computed as net practice income less return on capital. ‖Net practice income per owner was computed by dividing net practice income by the number of full-time equivalent employed owners. ¶Return to labor and management per owner was computed by dividing return to labor and management by the number of full-time equivalent employed owners. #Annual 1985 salary reported by full-time employed practice owners. **Return to management per owner was computed as the residual profit, ie, the return to labor and management per owner less the imputed return to labor per owner (ie, mean salary per owner). ††Number of usable responses.

practice income. For all practices, mean net practice income was $93,199. Mean net practice income ranged across practice types from a low of $76,346 to a high of $113,314 for large animal predominant. On the average, net practice income was 38% of gross practice income and showed a very narrow range from 36% for large animal predominant and mixed animal practice to 39% for small animal practice.

Net practice income includes return on capital invested, return to labor, and return to management. Return on capital invested was computed as 12% of practice equity or net worth. Equity equals the difference between the value of practice fixed assets and long-term debt. Return on capital invested represents a charge against practice income for the capital invested equal to the expected return if the capital were invested in its next best alternative use. Mean return on capital per practice was $12,591 (Table 1). It ranged from $4,672 for large animal exclusive to $14,608 for small animal exclusive.

Return to labor and management was computed as net practice income less return on capital. The mean return to labor and management was $80,609, ranging from approximately $72,000 for large animal exclusive and small animal predominant to approximately $103,500 for large animal predominant (Table 1). On the average, return to labor and management was about 32% of gross practice income.

Income per owner

Net practice income per owner was computed by dividing net practice income by the full-time equivalent number of veterinarian-owners working in the practice. On the average, there were 1.4 owners per practice, ranging from 1.2 for equine predominant to 2.0 for large animal predominant. The mean number of owners per practice for other practice types were: 1.5, large animal exclusive; 1.6, mixed animal; 1.4, small animal predominant; and 1.3, small animal exclusive.

Mean net practice income per owner in 1985 was $65,544, up 14% from 1983. It ranged from a low of $48,556 for large animal exclusive to a high of $75,166 for small animal exclusive (Table 1). Mean net practice income per owner was $53,939 for large animal predominant, $51,738 for mixed animal, $59,991 for small animal predominant, and $69,389 for equine predominant.

Return to labor and management per owner averaged $56,479, ranging from $44,108 for mixed animal practice, up 9% from 1983, to $63,011 for small animal exclusive, up 28% from 1983. For small animal exclusive practice owners, this represents an increase of 14%/yr. For all practice types, mean return to labor and management per owner increased 18% over the 2-year period, or about 9%/yr. While small animal practice owners showed strong gains, large animal and equine practice owners showed declines. For large animal exclusive, mean return to labor and management per owner declined 3% from $46,080 in 1983 to $44,732 in 1985, large animal predominant declined 3% from $49,129 in 1983 to $47,682 in 1985, and equine practice return declined 1% from $60,077 in 1983 to $59,231 in 1985.

Return to labor represents the owner's time as a veterinarian. In this analysis, return to labor was chosen to equal the annual 1985 salary reported by full-time self-employed veterinarian-owners of practices. The national average owner's salary was $46,169 in 1985. Large animal practice owners reported lower salaries in 1985 relative to 1983, while equine and small animal practice owners reported higher salaries. For 1985, annual salaries for owners ranged from a low of $35,970 for large animal exclusive to a high of $51,631 for small animal exclusive.

Subtracting owner's salary from return to labor and management per owner yields the return to management per owner. Return to management represents anticipated entrepreneurial profit in excess of the expected return on capital and labor. The mean return to management per owner was $10,311 (Table 1). It ranged from a low of $4,050 for mixed animal practice to $11,380 for small animal exclusive practice. It was $9,685 for equine predominant, $8,762 for large animal exclusive, $9,977 for large animal predominant, and $11,255 for small animal predominant. On the average, practices generated about 3% to 5% of 1985 gross practice income as return to management per owner.

Table 2—Mean and median 1985 practice income

	Gross practice income ($)		Return to labor and management per owner ($)	
	Mean	Median	Mean	Median
Equine predominant	247,035	155,000	59,231	50,070
Large animal exclusive	200,385	120,272	44,732	36,310
Large animal predominant	313,443	235,000	47,682	41,932
Mixed animal	232,156	180,000	44,178	42,178
Small animal predominant	219,701	176,107	50,847	46,593
Small animal exclusive	245,054	190,000	63,011	52,519
All practices	245,287	186,447	56,486	48,479

Mean income vs median income

Mean and median 1985 gross practice incomes and returns to labor and management per owner were calculated (Table 2). Mean incomes, commonly called "averages," were calculated for Tables 1 and 2 by summing all income values and dividing by the number of respondents. For compari-

Table 3—Mean 1985 gross practice income ($) and gross practice income ($) per veterinarian, by number of veterinarians

No. of veterinarians	Equine predominant	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive
1 (1 to 1.5)*	134,003†	106,846	122,025	102,279	131,824	147,871
	131,710‡	105,302	117,557	101,402	127,430	137,606
2 (1.6 to 2.5)	218,896	211,914	247,511	217,381	226,991	283,359
	108,156	104,878	121,716	108,794	110,569	138,468
3 (2.6 to 3.5)	349,200	354,912	422,978	361,799	372,834	458,694
	111,828	118,304	140,188	119,797	123,805	150,374
4 (3.6 to 4.5)	800,000	416,555	516,945	445,675	518,018	522,001
	200,000	104,138	128,473	110,240	129,504	132,229
5 or more (4.6 or more)	1,254,737	572,880	744,789	594,810	561,459	691,561
	176,343	109,859	129,315	107,215	97,798	102,881
All practices	247,035	200,385	313,443	232,156	219,701	245,054
	130,485	106,459	124,747	107,546	121,500	137,879
	(74)§	(71)	(175)	(159)	(179)	(179)

*Numbers in parentheses represent the range of full-time equivalents. For purposes of discussion in the text, the range of 1 to 1.5 will be referred to as a 1-veterinarian practice, and 1.6 to 2.5 as a 2-veterinarian practice, etc. †1985 mean gross practice income. ‡1985 mean gross practice income per veterinarian. §Number of usable responses.

son purposes, median incomes were calculated as the income level that divided the income distribution in half, ie, 50% of all veterinarians earning incomes below and 50% above this income level.

Table 2 shows that mean 1985 gross practice income was $245,287. The median 1985 gross practice income was $186,447, roughly $60,000 less than the mean. This difference between the mean and median highlights the fact that a few very high incomes offset many lower incomes to skew the mean upward. The mean incomes reported in Table 1 are useful for comparisons across practice types and over time, but median incomes reported in Table 2 more accurately reflect the "typical" practice owner's income level. Thus, the median return to labor and management for all practice owners in 1985 was $48,479 and ranged from a low of $36,310 for large animal practice to a high of $52,519 for small animal exclusive practice owners.

Practice income and number of veterinarians

To provide a perspective on the relationship between gross practice income and number of veterinarians, the sample of practices was divided into 5 classes according to the number of veterinarians in the practice (1, 2, 3, 4, or 5).

Gross practice income per veterinarian in 1985 ranged from $106,459 for large animal exclusive to $137,879 for small animal exclusive (Table 3). In general, 1-veterinarian practices generated between $100,000 and $148,000/yr, depending on practice type, 2-veterinarian practices generated revenues in the range of $211,000 to $283,000, and 3-veterinarian practices gener-

Table 4—Mean 1985 practice cash expenses ($), by type of practice

Expense item*	Equine predominant	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	All practices
Employed (nonowner) veterinarian wages	41,339	28,876	29,471	36,550	25,783	31,894	31,419
Nonprofessional staff wages	33,569	14,482	24,876	27,343	33,395	39,912	34,396
Payroll taxes	8,138	6,683	7,107	8,779	8,727	8,903	8,508
Drugs and hospital supplies	58,501	63,176	111,225	58,835	42,055	37,724	50,995
Office supplies	3,516	1,948	3,738	4,730	3,662	3,968	3,835
Office rent	4,231	4,933	7,676	14,776	11,957	20,045	15,253
Equipment rental	4,523	3,094	4,546	3,718	2,973	4,383	4,056
Auto expense	8,160	9,326	10,432	6,523	3,523	2,369	4,503
Utilities and telephone	5,745	3,298	6,047	5,869	6,346	6,283	6,048
Laboratory fees	5,167	2,838	2,383	2,300	2,715	4,911	3,945
Property taxes	1,943	1,712	1,704	1,873	2,125	2,907	2,439
Licenses, permits, dues, subscriptions	1,087	912	1,038	1,066	1,187	1,504	1,308
Building and equipment repair and maintenance	2,948	1,369	2,350	2,669	2,427	3,334	2,896
Accounting and legal	1,587	1,495	1,731	1,460	1,859	2,356	2,039
Insurance	6,641	3,921	4,918	4,866	5,771	4,697	4,975
Interest	9,030	4,727	5,616	6,800	6,433	8,824	7,898
Continuing education and travel	2,940	1,510	1,280	1,375	1,591	1,612	1,616
Disposal	477	452	574	810	1,070	1,035	909
Feed	5,545	7,293	4,427	2,284	2,316	3,632	3,677
Pension and profit sharing (nonowners)	14,348	7,928	6,340	5,394	5,432	7,934	7,468
Miscellaneous	2,389	4,343	3,858	3,411	3,758	4,075	3,863

*Includes only practices incurring an expense for each item; missing values and zero expenses were excluded.

Table 5—Mean 1985 practice cash expenses as a percentage of total practice expenses and gross practice revenue, by type of practice

Expense item*	Equine predominant		Large animal exclusive		Large animal predominant		Mixed animal		Small animal predominant		Small animal exclusive		All practices	
	% of total expenses	% of gross revenue	% of total expenses	% of gross revenue	% of total expenses	% of gross revenue	% of total expenses	% of gross revenue	% of total expenses	% of gross revenue	% of total expenses	% of gross revenue	% of total expenses	% of gross revenue
Employed (nonowner) veterinarian wages	16.0	10.7	14.6	10.1	11.8	7.8	16.6	11.6	13.8	9.1	13.4	8.9	13.8	9.2
Nonprofessional staff wages	14.6	9.3	11.2	6.5	13.2	8.3	17.7	11.2	23.0	14.5	25.5	15.3	21.7	13.2
Payroll taxes	4.1	2.7	4.2	2.6	3.6	2.3	4.9	3.1	6.0	4.5	5.3	3.2	5.1	3.2
Drugs and hospital supplies	42.5	24.4	50.3	30.4	53.6	35.1	42.1	26.5	33.2	21.1	27.7	16.2	34.7	21.2
Office supplies	3.3	1.8	2.1	1.1	2.3	1.4	3.2	2.1	3.0	1.9	2.8	1.7	2.8	1.7
Office rent	3.5	2.4	3.4	2.2	6.6	4.1	8.5	6.1	11.2	7.9	15.1	9.7	11.7	7.7
Equipment rental	3.5	2.3	3.2	1.9	2.4	1.6	2.3	1.4	2.9	2.1	2.8	1.8	2.8	1.8
Auto expense	7.0	4.1	9.4	5.5	6.1	3.7	5.3	3.3	3.4	2.1	2.3	1.3	3.8	2.2
Utilities and telephone	4.8	2.9	3.6	2.1	3.6	2.3	4.8	2.9	5.5	3.4	5.3	3.0	5.0	2.9
Laboratory fees	3.8	2.2	2.3	1.3	1.3	0.8	1.5	0.9	2.1	1.2	3.2	1.9	2.6	1.6
Property taxes	1.4	0.8	1.3	0.8	1.0	0.6	1.7	1.1	1.7	1.0	2.5	1.3	2.0	1.1
Licenses, permits, dues, subscriptions	1.0	0.6	1.2	0.7	0.7	0.4	0.9	0.6	1.0	0.7	1.2	0.7	1.1	0.7
Building and equipment repair and maintenance	1.6	1.0	1.5	0.8	1.3	0.8	2.0	1.2	2.1	1.3	2.4	1.4	2.1	1.2
Accounting and legal	1.5	0.9	1.8	0.9	0.9	0.6	1.0	0.6	1.3	0.9	1.7	1.0	1.5	0.9
Insurance	4.7	2.7	3.9	2.4	2.8	1.8	3.3	2.1	4.1	2.6	3.1	1.8	3.4	2.0
Interest	5.9	3.9	5.1	2.9	3.6	2.5	5.6	3.8	5.9	3.9	7.3	4.7	6.3	4.1
Continuing education and travel	2.4	1.4	1.5	0.8	0.8	0.5	1.1	0.7	1.2	0.7	1.2	0.7	1.2	0.7
Disposal	0.4	0.3	0.5	0.3	0.7	0.4	0.5	0.3	0.7	0.5	0.7	0.4	0.7	0.4
Feed	3.3	2.0	0.4	2.2	2.0	1.4	1.6	1.0	1.8	1.1	2.3	1.4	2.1	1.4
Pension and profit sharing (nonowners)	7.5	4.2	4.3	2.6	2.8	1.6	3.5	2.0	2.5	1.4	3.6	2.2	3.6	2.1
Miscellaneous	2.8	1.5	3.0	1.9	1.8	1.2	2.3	1.5	3.2	2.0	2.7	1.8	2.7	1.7

*Includes only practices incurring an expense for each item; missing values and zero expenses were excluded.

Table 6—Median 1985 veterinary practice financial ratios

	Equine predominant	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	All practices
Return to labor and management: gross practice income	0.34	0.39	0.30	0.31	0.31	0.33	0.33
Total practice debt: total practice assets	0.29	0.29	0.22	0.33	0.33	0.38	0.34
Total practice debt: practice net worth	0.67	0.63	0.53	0.73	0.60	0.67	0.65
Current assets: current liabilities	3.33	3.27	3.57	2.00	1.76	1.64	2.08
Drug and hospital supply expense: drug and hospital supply inventory	5.00	4.89	3.56	3.87	4.16	3.95	4.04

ated $350,000 to $460,000/yr. With the exception of equine predominant and small animal predominant, all other practice types reached a peak in gross revenue generated per veterinarian with the 3-veterinarian size of practice. Veterinary practices may achieve economies of scale at this level, beyond which growth in number of veterinarians produces diminishing returns.

Practice expenses

Veterinary practice owners reported 1985 cash expenditures for 21 practice expense items (Table 4). Mean annual expense for each expense item was determined by practice type for those practices incurring a particular expense.

Generally, drugs and hospital supply expenses represented the greatest expense item, ranging from $37,724 for small animal exclusive to $111,225 for large animal predominant practice. Other cash operating expenses are summarized according to the type of practice (Table 4).

Operating expense ratios or percentages also were developed for the 21 practice expense items (Table 5). For each practice, each expense was divided by total practice expenses and then by gross practice income. Missing values or zero expenditures for a particular expense were not included in the computation of the percentage for that particular expense item. For this reason, the sum of all operating expense percentages for a particular practice type equals more than 100%.

Drugs and hospital supply expenses represented 34.7% of total practice expenses and 21.2% of gross practice revenue. With a few exceptions, most operating expense percentages showed little change from 1983.[2] For small animal predominant and small animal exclusive, employed (nonowner) veterinarian wages declined from 16.7% and 14.9% of total expenses in 1983, respectively, to 13.8% and 13.4% of total expenses in 1985, respectively.

Financial ratios

Five financial ratios were computed to examine the relationship of certain financial variables to one another (Table 6). Ratios presented here are not absolute criteria for operating performance, but rather represent industry bench marks or averages.

As a measure of profitability, the median ratio of practice owner's return to labor and management to gross practice income was determined to be 0.33. This means that, on the average, after deducting all practice expenses including an expected return on capital invested (owners' equity) in the practice, practice owners' net income before personal taxes from practice was 33% of gross practice income. Stated another way, for every dollar of gross practice income generated in 1985, 33 cents was net income to the practice owner(s). A comparison with 1983 showed that over the 2-year period, this ratio declined for every practice type by 1 to 3 percentage points.

As a measure of long-run solvency, the median ratio of total practice debt to total practice assets was estimated to be 0.34, down from 0.39 in 1983. This ratio is useful to creditors, because it indicates the proportion of practice assets that are financed outside the practice. Another measure of long-run solvency is total practice debt to practice net worth, or owner's equity. If this ratio is greater than 1.0, then external debt is greater than owner's equity and, from a creditor's point of view, the practice may be undercapitalized. In 1985, total debt to net worth suggests that owners are not highly leveraged through outside financing.

A measure of a practice's ability to meet short-term debts is the acid-test or quick ratio. The acid-test ratio relates current assets (ie, cash, short-term marketable securities, and accounts receivable) to total current liabilities (ie, accounts payable and notes payable in 1 year). The median acid-test ratio of current assets to current liabilities was 2.08 in 1985, up slightly from 1.92 in 1983.

Inventory turnover ratio measures how many times a practice's inventory has been depleted during the year. Median inventory turnover was computed by dividing drugs and hospital supply expenses by the value of drugs and hospital supply inventory and in 1985 was 4.04, up from 3.33 in 1983.

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Economic Note

1985 Professional incomes of US veterinarians, by hours worked and years since graduation

In 1985, the mean income of veterinarians in private practice was $48,056, and the mean income of veterinarians not in private practice was $47,280.[1] In this report, veterinarians' incomes are reported separately for private practice owners and private practice employees. Owners' individual incomes have been reducing veterinarians' 1985 incomes according to hours worked and years of experience.

Mean income, by hours worked

Veterinarians indicated their 1985 individual net income, before personal taxes, from professional veterinary medical activity, in private practice was $42,498 (Table 1), which represents a 7.1% increase from $39,669 in 1983.[2] The mean number of hours worked per week in professional veterinary medical activity was 51.2 hours. For 50 weeks worked per year, US private practitioners earned an average of $16.89/h in 1985, ranging from $13.47/h for

Table 1—Mean professional income and hours worked for veterinarians in private practice, 1985

	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	Equine	All practices
Veterinarian-owner							
Mean income*	$41,516	$47,208	$42,737	$46,915	$54,608	$59,652	$51,064
(No. of responses)	(81)	(195)	(172)	(193)	(214)	(90)	...
Mean hours worked per week	55.9	56.7	56.2	52.5	48.3	58.1	51.5
Mean income per hour†	$15.05	$16.79	$15.09	$18.00	$22.93	$20.16	$20.18
Veterinarian-employee							
Mean income	$31,750	$27,101	$27,269	$30,875	$31,104	$37,819	$30,665
(No. of responses)	(20)	(53)	(78)	(88)	(216)	(63)	...
Mean hours worked per week	53.0	56.6	56.6	51.6	46.9	59.1	50.6
Mean income per hour	$11.92	$9.79	$9.89	$12.37	$13.59	$12.91	$12.51
All veterinarians in private practice							
Mean income‡	$40,051	$42,790	$37,911	$41,963	$42,744	$51,123	$42,498
(No. of responses)	(101)	(248)	(250)	(281)	(430)	(161)	...
Mean hours worked per week	55.6	56.8	56.3	52.2	47.7	58.5	51.2
Mean income per hour	$14.51	$15.23	$13.47	$16.26	$18.21	$17.31	$16.89

*Mean income for private practice owners defined as mean return to labor and management, ie, individual net practice income less 12% return on owner's equity in the practice (fair market value of fixed assets less long-term debt). †Based on estimated 50 weeks worked per year. ‡Weighted mean of private practice owners' and employees' incomes, by practice type.

duced computationally by a 12% return on the owners' equity in fixed assets used in the practice; thus, owners' individual income represents only professional veterinary medical income. This income adjustment permits a more realistic comparison of private practice owners', practice employees', and nonprivate practicing veterinarians' 1985 incomes according to hours worked and years of experience.

In 1985, the mean professional income of US veterinarians including income from practice, salary, profit sharing, and bonuses. Mean income was calculated as the arithmetic mean by summing all income values and dividing by the number of respondents. Respondents were included in this analysis if they worked on the average at least 30 h/wk and at least 48 weeks in their reported practice type or for their employer in 1985.

mixed animal practice to $18.21/h for small animal exclusive practice.

A comparison of veterinarian-owners and veterinarian-employees in private practice indicates that owners and employees worked nearly the same number of hours per week. Veterinarian-employees earned $12.51/h, up $1.12/h from 1983. Veterinarian-owners increased their hourly earnings from $16.89 in 1983 to

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Table 2—Mean professional income and hours worked for veterinarians not in private practice, 1985

	College or university	Federal government	State or local government	Armed forces	Industry	Other/not-for-profit organization	All employers
Mean income	$43,804	$43,323	$40,549	$41,688	$62,547	$53,529	$47,280
(No. of responses)	(239)	(213)	(211)	(194)	(146)	(71)	...
Mean hours worked per week	52.7	45.6	44.2	48.0	49.2	48.9	49.6
Mean income per hour*	$16.85	$19.61	$18.53	$17.64	$25.96	$21.98	$19.49

*Based on estimated 50 weeks worked per year.

Table 3—Mean professional incomes of private practice owners, by years since graduation, 1985

Years since graduation	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	Equine
3 to 7 years*	$32,044	$42,430	$43,031	$38,486	$40,848	$49,820
	(22)†	(33)	(35)	(40)	(30)	(25)
8 to 12 years	47,511	48,732	48,352	46,945	52,593	70,002
	(15)	(53)	(38)	(53)	(50)	(26)
13 to 17 years	41,390	58,184	40,838	60,941	62,905	61,611
	(14)	(18)	(15)	(26)	(35)	(17)
18 to 22 years	55,801	49,560	46,203	54,758	59,358	53,259
	(9)	(19)	(13)	(23)	(37)	(7)
23 to 27 years	41,567	49,172	39,238	60,073	78,313	78,109
	(7)	(29)	(20)	(15)	(22)	(7)
28 to 32 years	37,402	44,864	47,220	41,723	32,727	57,056
	(10)	(16)	(23)	(18)	(20)	(5)
33 to 40 years	...	38,675	31,405	31,961	56,335	...
		(16)	(12)	(7)	(9)	
More than 40 years	...	46,835	39,500	34,060	53,013	74,456
		(10)	(13)	(5)	(10)	(6)

*Mean income for private practice owners defined as mean return to labor and management, ie, individual net practice income less 12% return on owner's equity in the practice (fair market value of fixed assets less long-term debt). †Number of usable responses in parentheses.

Table 4—Mean professional incomes of private practice employees, by years since graduation, 1985

Years since graduation	Large animal exclusive	Large animal predominant	Mixed animal	Small animal predominant	Small animal exclusive	Equine
1 to 2 years	$22,500	$21,061	$22,815	$23,500	$23,435	$27,500
	(3)*	(14)	(19)	(18)	(39)	(12)
3 to 7 years	29,772	29,031	27,654	30,136	29,789	35,088
	(11)	(32)	(42)	(44)	(107)	(29)
8 to 12 years	29,500	...	31,428	41,125	39,038	45,909
	(3)		(14)	(16)	(39)	(11)

*Number of usable responses in parentheses.

$20.18 in 1985, an increase of $3.29/h.

The mean 1985 income of US veterinarians not in private practice was $47,280 (Table 2). The mean number of hours worked per week to earn income in professional veterinary medical activity was 49.6 hours, ranging from 44.2 hours in state or local government to 52.7 hours in academia.

On the basis of 50 weeks worked per year, nonprivate practice veterinarians earned an average $19.49/h in 1985, down $0.44 from 1983. The decline was attributable to slight increases in mean annual income (+1.2%) and mean hours worked (+1.4%).

Mean income, by years since graduation

Professional incomes were analyzed by the number of years since graduation from veterinary medical college. Peak earning years for small animal predominant, small animal exclusive, and equine predominant practice owners were in the 23- to 27-year group (Table 3). Owners of small animal exclusive and equine practices reached their peak with a mean professional income of approximately $78,000. The highest mean incomes for large animal predominant and exclusive practice owners were $55,801 and $58,184, respectively. Comparison with 1983 shows that established large animal practice owners suffered losses in earnings over the 2-year period.[2]

With respect to veterinarians employed in private practice, mean professional incomes were estimated for 3 groups by years since graduation: 1 to 2 years; 3 to 7 years; and 8 to 12 years (Table 4). As in 1983, large animal exclusive employed veterinarians' incomes were stable after 3 to 7 years of experience. For all other practice types, earnings for employed veterinarians increased steadily and peaked in the 8- to 12-year group. In the 8- to 12-year group, highest earnings were achieved by equine veterinarians, with a mean of $45,909, down 15% from 1983. Veterinarians in mixed animal practice had the lowest mean incomes in this

Table 5—Mean professional incomes of veterinarians not in private practice, by years since graduation, 1985

Years since graduation	College or university	Federal government	State or local government	Armed forces	Industry	Other/not-for-profit organization
3 to 7 years	$24,724 (62)*	$28,811 (23)	$33,357 (7)	$32,316 (49)	$40,411 (17)	$25,583 (8)
8 to 12 years	39,598 (56)	37,107 (28)	36,666 (24)	38,555 (54)	48,439 (33)	43,133 (9)
13 to 17 years	45,100 (25)	38,071 (14)	39,833 (18)	45,625 (24)	56,817 (15)	69,833 (6)
18 to 22 years	53,963 (22)	44,500 (20)	41,050 (20)	49,135 (37)	70,684 (19)	55,000 (12)
23 to 27 years	61,860 (25)	51,341 (41)	44,828 (35)	58,300 (15)	80,280 (25)	64,464 (14)
28 to 32 years	59,795 (22)	49,269 (39)	41,833 (36)	50,500 (3)	85,112 (20)	59,316 (6)
33 to 40 years	61,200 (15)	46,300 (25)	39,846 (49)	...	60,615 (13)	51,357 (7)
More than 40 years	50,555 (9)	47,500 (14)	40,600 (18)	46,214 (7)	...	68,166 (6)

*Number of usable responses in parentheses.

group, with $31,428, up 23% from 1983.

Mean professional incomes of veterinarians not in private practice also were analyzed with respect to number of years since graduation (Table 5). In contrast to private practice, nonprivate practice earnings had a relatively steady growth pattern throughout veterinarians' careers in industry, government, and academia. As in 1983, earnings were highest in industry in all groups by years since graduation.

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Suppression of cortisol responses in cats during megestrol acetate and prednisolone therapy

Seven cats were given prednisolone (at least 2 mg/kg of body weight/day) and 7 cats were given megestrol acetate (5 mg/cat/day) PO from days 1 to 16. Three cats were not treated. Basal and stimulated cortisol concentrations, food and water intake, hematologic and blood biochemical changes, urinalyses, and hepatic and cutaneous histologic changes were studied in all cats before, during, and 2 weeks after treatment. Cats given prednisolone or megestrol acetate had significant suppression of stimulated cortisol values on day 8. This change was more marked on day 15, when the suppression in cats given megestrol acetate also was significantly more severe than that in cats given prednisolone. Recovery of adrenal reserve was considered present on day 30 in 6 of 7 cats given prednisolone, but in only 3 of 7 cats given megestrol acetate. Eosinopenia, glycosuria, and hepatocyte swelling from glycogen deposition were recorded occasionally in treated cats of both groups, providing additional circumstantial evidence for glucocorticoid activity of megestrol acetate in cats. Abrupt withdrawal of prednisolone or megestrol acetate therapy should be avoided in cats to reduce the chance of precipitating clinical signs of hypoadrenocorticism, even after treatment for as little as 1 week.—*D. J. Middleton, A. D. J. Watson, C. J. Howe, et al in Can J Vet Res 51 (January 1987):60.*

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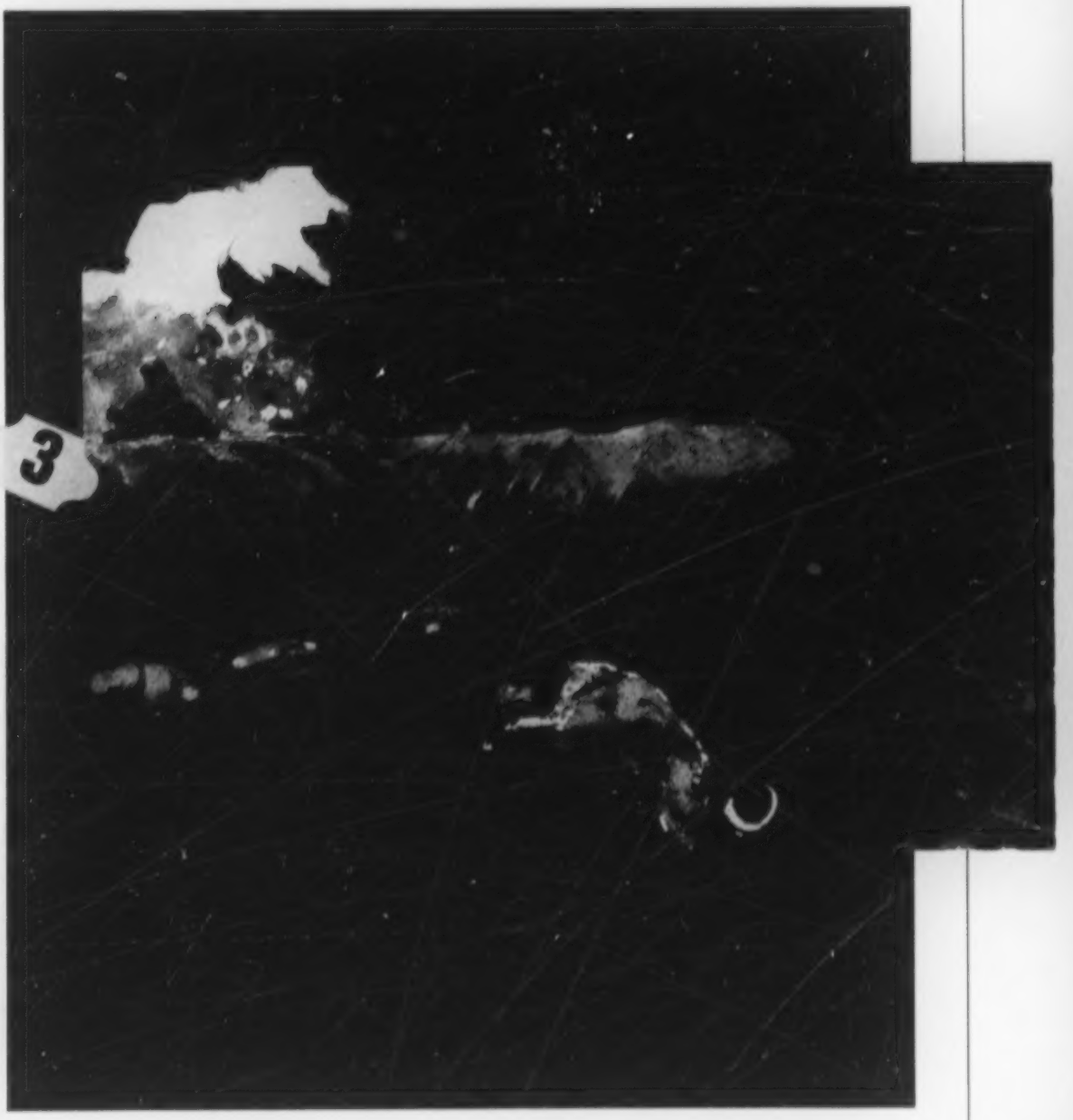

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About the Cover

"Hunting Dog Among Dead Trees" was painted in 1894 by American artist Winslow Homer (1863–1910). Homer apprenticed as a lithographer and, during the Civil War, became a pictorial reporter, contributing sketches to *Harper's Weekly*. Best known as a painter of American genre scenes, seascapes, and landscapes, he was especially noted as a watercolorist, in which medium he achieved remarkable effects of light, color, and atmosphere. In "Hunting Dog Among Dead Trees", these effects are especially evident, as Homer adroitly revealed the woodland darks, cool shadows, and bright glints of light inspired by hunting and fishing trips taken after he settled on the coast of Maine in the mid-1880s.

Reproduction of this 15⅛ × 21½-inch watercolor on paper (21.1432, Gift of William Sturgis Bigelow) was made possible through the Museum of Fine Arts, Boston.

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On day 8, when the dog was discharged, he was eating and drinking well, weighed 13.2 kg, and did not have ascites.

Histologically, masses were determined to be organized thrombi, and the pericardium had focal fibrosis, internal hemosiderin deposition, and fibrin deposition. Bacteria or fungi were not isolated from specimens of the masses or the pericardium. Idiopathic hemorrhagic pericardial effusion with organized thrombi was diagnosed. The dog was healthy 3 months after surgery.

Idiopathic hemorrhagic pericardial effusion is characterized by a thick pericardium attributable to focal pericardial inflammation and neovascularization with deposition of fibrin.[6] Usually, the accumulation of blood in the pericardial space is slow and progressive, resulting in a long duration between recurrences of cardiac tamponade.[6,7] The pericardial fluid has the characteristics of noninflammatory chronic hemorrhage[8,9] and usually does not clot or contain thrombi. However, thrombi may be found in dogs with acute, severe intrapericardial hemorrhage.[10] Therefore, the presence of thrombi in the pericardial fluid and the recurrence of effusion 24 hours after centesis may have been a reflection of the severity of the disease process.

The echocardiographic findings led us to include hemangiosarcoma of the right atrial and ventricular walls in our list of differential diagnoses.[1] The possibility of chemodectoma was considered less likely because of the lack of involvement of the ascending aorta.[1] However, hemangioscarcomas tend to invade the adjacent myocardium and right atrial lumen.[11,12] Myocardial involvement by the masses was difficult to assess, but masses were not seen in the lumen of the right atrium of this dog. The ectopic ventricular complexes on the electrocardiogram did not indicate or rule out the possibility that the masses involved the myocardium. Rather, these ectopic complexes probably were the expression of an escape phenomenon concomitant with increased vagal tone, characterized by a pronounced sinus arrhythmia and a Wenckebach-type second-degree atrioventricular block.

These findings indicate that masses found on the right atrial wall are not always neoplastic and that pericardiectomy and biopsy are needed for a definitive diagnosis.[1]

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Correction: 1985 incomes of US veterinarians

In an economic note entitled "1985 incomes of US veterinarians" (JAVMA, May 15, 1987, pp 1333–1337), by J. Karl Wise, the 1985 median individual net income of US veterinarians in private practice was reported in text as $37,730. The figure should have been in agreement with that cited in Table 2 of the economic note, $37,082. The author regrets the error.

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tice income declined 3.6%, while mean real private practice income declined 0.1% over the 2-year period.

On the basis of the 1985 AVMA manpower study, mean real private net individual income was projected to decline by the year 2000 to 75% of its value in the year 1980.[6] Most of the decline was projected to occur by 1990 as mean real private practice income would fall to 82% of its 1980 level by the year 1990. From 1980 to 1990, this represents an 18% decline in projected real income. It was stated in the manpower study synopsis that the impact would be less for some established practitioners than for new veterinarians, but all practitioners would be affected. Specifically, it was believed that the impact of the projected decline would be reflected initially in depressed entry-level salaries, followed by lower overall mean real incomes in subsequent years.

Table 2—Money and real incomes in private practice, 1980–1986

	1980 ($)	1983 ($)	1985 ($)	1986 ($)
Private practice starting salary				
Money income	18,552 (1.00)*	19,872 (1.07)	20,956 (1.13)	21,205 (1.14)
Real income†	22,433 (1.00)	19,872 (0.89)	19,421 (0.87)	19,277 (0.86)
Private practice owners' professional income‡				
Money income	38,755 (1.00)	44,249 (1.14)	51,064 (1.32)	... ...
Real income	46,862 (1.00)	44,249 (0.94)	47,281 (1.01)	... ...

*Numbers in parentheses are standardized values (1983 = 1.00) to indicate change in money and real incomes over time. †Money income expressed in 1983 dollars, ie, correcting for the increased cost of living measured by the consumer price index (all urban consumers). ‡Excludes owners' economic return on equity in practice real estate.

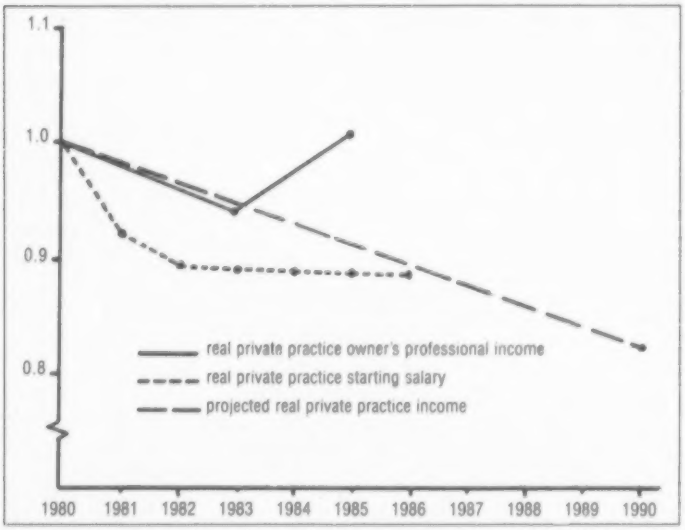

Figure 1—Standardized trends in real private practice income (1980 = 1.0).

Table 2 shows money and real incomes for specific years from 1980 to 1986 for new veterinarians and private practice owners.[7] Starting salaries increased 14% over this period in money terms, but declined 14% in real terms. New veterinarians' incomes in real terms in 1986 have declined to 86% of their 1980 level. Figure 1 shows that the decline occurred before 1982 and has been nearly level since then.

Private practice owners' professional incomes increased by 32% in money terms, slightly more than the consumer price index (31% increase) from 1980 to 1985. Practice owners' incomes, specifically incomes of small animal practice owners, kept pace with increased costs of living because of substantial increases in practice revenues from 1983 to 1985. From 1980 to 1983, mean real income of practice owners actually declined by 6%, but rebounded to its 1980 level by 1985.

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